

Current Microbiology

An International Journal

Mortimer P. Starr, Editor

Volume 4

1980



Springer International

The exclusive copyright for all languages and countries, including the right to photomechanical and any other reproductions, also in microform, is transferred to the publisher.

The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Printed in the United States of America
1980 by Springer-Verlag New York Inc.

Current Microbiology

An International Journal

Editorial Board

- ALBERT BALOWS Bacteriology Division, Center for Disease Control, Atlanta, Georgia 30333, USA, Telephone: (404) 329-3711
- ARTHUR L. BARRY University of California, Davis, Medical Center, 2315 Stockton Boulevard, Sacramento, California 95817, USA, Telephone: (916) 453-2544
- PAUL BAUMANN Department of Bacteriology, University of California, Davis, California 95616, USA, Telephone: (916) 752-0272
- TOM BERGAN Department of Microbiology, Institute of Pharmacy, University of Oslo, P. O. Box 1108, Blindern, Oslo 3, Norway, Telephone: (02)-466800, ext. 7654
- ARUN K. CHATTERJEE Department of Plant Pathology, Kansas State University, Manhattan, Kansas 66506, USA, Telephone: (913) 532-6176
- J. WILLIAM COSTERTON Department of Biology, University of Calgary, Calgary, Alberta, Canada T2N 1N4, Telephone: (403) 284-7301
- PATRICK A. D. GRIMONT Services des Entérobactéries, Institut Pasteur, 25, rue du Docteur Roux, F-75724 Paris Cedex 15, France, Telephone: 541 52-66
- JAN HOLMGREN Department of Bacteriology, Institute of Medical Microbiology, University of Göteborg, Guldhedsgatan 10, S-41346 Göteborg, Sweden, Telephone: (031) 410010
- HANS J. KNACKMUSS Institut für Mikrobiologie, Universität Göttingen, Grisebachstrasse 8, D-3400 Göttingen, Federal Republic of Germany, Telephone: (0551) 393776
- MILOSLAV KOCUR Czechoslovak Collection of Microorganisms, J. E. Purkyně University, tř. Obránců Míru 10, CS-66243 Brno, Czechoslovakia, Telephone: Brno 234 07
- MANLEY MANDEL Department of Biology, M. D. Anderson Hospital and Tumor Institute, University of Texas, Houston, Texas 77030, USA, Telephone: (713) 792-2590
- JARUE S. MANNING Department of Bacteriology, University of California, Davis, California 95616, USA, Telephone: (916) 752-2626
- SEIICHI NASUNO Central Research Laboratories, Kikkoman Shoyu Co., Ltd., 399 Noda, Noda-shi, Chiba-ken, Japan, Telephone: (0471) 24-5151
- FRANCESCO PARENTI Dow Chemical USA, P. O. Box 68511, Indianapolis, Indiana 46268, USA, Telephone: (317) 873-7050
- EUGENE ROSENBERG Department of Microbiology, University of Tel Aviv, Ramat Aviv, Tel Aviv, Israel, Telephone: Tel Aviv 416111
- JEAN M. SCHMIDT Department of Botany and Microbiology, Arizona State University, Tempe, Arizona 85281, USA, Telephone: (602) 965-3904
- RAFAEL SENTANDREU Departamento de Microbiología, Facultad de Farmacia, Universidad de Valencia, Avenida Blasco Ibañez, 13, Valencia-10, Spain, Telephone: (96) 3601462
- MORTIMER P. STARR Department of Bacteriology, University of California, Davis, California 95616, USA, Telephone: (916) 756-7000
- GEORGI A. ZAVARZIN Institute of Microbiology, Academy of Sciences USSR, 60-let October 7, Building 2, 117312 Moscow B-312, USSR, Telephone: 135 21 39

with special fields

- Clinical microbiology
- Clinical microbiology; antibiotics
- Marine bacteria; bacterial metabolism; bacterial classification
- Bacteriophage; numerical taxonomy; pharmaceutical microbiology; medical microbiology; antibiotics
- Bacterial genetics and physiology
- Ultrastructure; cell envelope; microbial ecology
- Human pathogens; bacterial ecology and taxonomy
- Immunology, bacterial toxins
- Environmental microbiology, chemistry of natural products
- Bacterial taxonomy; culture maintenance
- Molecular genetics and taxonomy
- Virology; oncogenic viruses
- Industrial fermentations; enzymology
- Antibiotics and chemotherapy
- Petroleum microbiology; environmental microbiology
- Microbial morphogenesis and ultrastructure; aquatic bacteria; prokaryote diversity; virology
- Yeast and fungi
- Phytopathogenic bacteria; prokaryote diversity, ecology, and taxonomy
- Lithotrophic microorganisms; bacterial diversity and ecology

Editorial Office

Mortimer P. Starr, Editor • Department of Bacteriology • University of California • Davis, California 95616, USA
Telephone: (916) 756-7000

Publisher's Office

Springer-Verlag New York Inc. • 175 Fifth Avenue • New York, New York 10010, USA • Telephone: (212) 477-8200



SPRINGER INTERNATIONAL

Springer-Verlag New York • Heidelberg • Berlin

Printed in the United States

© 1980 Springer-Verlag New York Inc.

ISSN 0343-8651

Table of Contents—Volume 4, 1980

Number 1, 1980

Emilio Weiss, Marius G. Peacock, and Jim C. Williams Glucose and Glutamate Metabolism of <i>Legionella pneumophila</i>	1
R. J. Owen and B. Holmes Differentiation Between Strains of <i>Flavobacterium breve</i> and Allied Bacteria by Comparisons of Deoxyribonucleic Acids	7
J. N. Verma, A. Khera, G. K. Khuller, and D. Subrahmanyam Phosphoglyceride Metabolism in <i>Streptomyces griseus</i>	13
W. Van Pee, J. Stragier, and L. Boni <i>Yersinia</i> Strains Isolated from River Water: Biochemical, Serological, and Phage Typing Characteristics	17
Terrance O. Kurtz, Drew J. Winston, William J. Martin, Lowell S. Young, and William L. Hewitt Comparative In Vitro Activity of Moxalactam (LY127935), Other Beta-Lactam Antibiotics, and Aminoglycosides.....	21
Nonna Kordová and John C. Wilt Effect of Trypsinization on Susceptibility of Primary Human Amniotic Cells to <i>Chlamydia trachomatis</i> TW-3 Strain	27
Robert D. Lemmon, John J. Rowe, and Gerald J. Tritz Isolation and Characterization of Mutants of <i>Escherichia coli</i> Defective in Pyridine Nucleotide Cycle Enzymes	31
Lynne A. Stirling and J. J. Perry Purification and Properties of a Nicotinamide Adenine Dinucleotide-Linked Cyclohexanol Dehydrogenase from a <i>Nocardia</i> Species.....	37
Martha G. Levine, M. J. Pickett, and Manley Mandel Taxonomy of Nonfermentative Bacilli: The Ilk-2 Group	41
L. V. Soltész and P.-A. Mårdh Serum-Free Liquid Medium for <i>Neisseria gonorrhoeae</i>	45
E. Metzger and Y. S. Halpern Mutations Affecting the Regulation of γ -Aminobutyrate Utilization in <i>Escherichia coli</i> K-12	51
Gillian R. Quinn and V. B. D. Skerman <i>Herpetosiphon</i> —Nature's Scavenger?.....	57

Number 2, 1980

Gordon E. Buchanan and Mortimer P. Starr Phytotoxic Material from Associations Between <i>Erwinia amylovora</i> and Pear Tissue Culture: Possible Role in Necrotic Symptomatology of Fireblight Disease.....	63
C. A. Demko and M. J. Thomassen Effect of Mucoïd Property on Antibiotic Susceptibility of <i>Pseudomonas aeruginosa</i>	69
R. A. Del Giudice, R. S. Gardella, and H. E. Hopps Cultivation of Formerly Noncultivable Strains of <i>Mycoplasma hyorhinis</i>	75
M. Söllhuber, M. T. Grande, G. G. Trigo, D. Vázquez, and A. Jiménez Structure-Activity Relationships Between Cryptopleurine and Related Compounds Acting on Yeast Cell-Free Systems	81
Eiji Ichishima, Yoshinori Tsuruda, Taro Ushijima, Takehiko Nomi, Shoji Suzuki, Michio Takeuchi, and Akiko Yamane Soluble and Bound Forms of Intracellular Acid Carboxypeptidase in <i>Aspergillus saitoi</i>	85
Jesús Sánchez and Carlos Hardisson Evidence for Two β -Galactosidase Activities in <i>Streptomyces violaceus</i>	91

J. Raghava Reddy and A. Purnachandra Reddy <i>Erysiphe euphorbiae</i> sp. nov. on <i>Jatropha gossypifolia</i> L	95
V. Farkaš and A. Svoboda Kinetics of β -Glucan and Chitin Formation by Cells and Protoplasts of the Yeast <i>Saccharomyces cerevisiae</i>	99
K. H. Wong, P. R. B. McMaster, John C. Feeley, R. J. Arko, W. O. Schalla, and F. W. Chandler Detection of Hypersensitivity to <i>Legionella pneumophila</i> in Guinea Pigs by Skin Test	105
Don J. Brenner, Arnold G. Steigerwalt, G. W. Gorman, Robert E. Weaver, James C. Feeley, L. G. Cordes, Hazel W. Wilkinson, Charlotte Patton, Berenice M. Thomason, and Karen R. Lewallen Sasseville <i>Legionella bozemanii</i> sp. nov. and <i>Legionella dumoffii</i> sp. nov.: Classification of Two Additional Species of <i>Legionella</i> Associated with Human Pneumonia	111
Jean-Michel Alonso, Etienne Vilmer, Daniel Mazigh, and Henri H. Mollaret Mechanisms of Acquired Resistance to Plague in Mice Infected by <i>Yersinia enterocolitica</i> O3	117
Kenneth R. Luehrsén, George E. Fox, and Carl R. Woese The Sequence of <i>Tetrahymena thermophila</i> 5S Ribosomal Ribonucleic Acid	123

Number 3, 1980

Paul Baumann, Linda Baumann, Sookie S. Bang, and Marilyn J. Woolkalis Reevaluation of the Taxonomy of <i>Vibrio</i> , <i>Beneckeia</i> , and <i>Photobacterium</i> : Abolition of the Genus <i>Beneckeia</i>	127
Linda Baumann, Sookie S. Bang, and Paul Baumann Study of Relationship Among Species of <i>Vibrio</i> , <i>Photobacterium</i> , and Terrestrial Enterobacteria by an Immunological Comparison of Glutamine Synthetase and Superoxide Dismutase	133
Clauzell Stevens, Reynolds M. Cody, and Robert T. Gudauskas Arginine Metabolism by the Corn Stunt Spiroplasma	139
Lennart Larsson, Per-Anders Mårdh, and Göran Odham Analysis of Glucose Catabolites by Using Head-Space Gas Chromatography for Differentiation of Some Gram- Negative Species	143
H. M. Mazzone, W. F. Engler, and G. F. Bahr Mass and Molecular Weight of Bacteriophages T 2 and T 5	147
Daniel V. Lim and Mary H. Marnell Confirmatory Identification of Group D Streptococci by Slide Co-Agglutination	151
John M. Larkin Isolation of <i>Thiothrix</i> in Pure Culture and Observation of a Filamentous Epiphyte on <i>Thiothrix</i>	155
Iwao Takahashi Effect of Nalidixic Acid on Sporulation of Catabolite-Resistant Mutants of <i>Bacillus subtilis</i>	159
Edward P. Lau, Kenneth M. Gibson, and R. Ray Fall Alternate Microbial Strategies for the Metabolism of a 3-Methyl Branched Alkanoic Acid	163
M. Ines Minguez and Tomas Ruiz-Argüeso Relative Energy Efficiency of Nitrogen Fixation by Nodules of Chickpeas (<i>Cicer arietinum</i> L.) Produced by Different Strains of <i>Rhizobium</i>	169
Mario Campa, Vittorio Colizzi, Carlo Garzelli, Luis Toca, and Giuseppe Falcone <i>Pseudomonas aeruginosa</i> Infection: Activation of B Suppressor Cells Which Affect Cell Cooperation in the Induction Phase of Contact Sensitivity to Oxazolonone in Mice	173
I. Mattsby-Baltzer, H.-A. Hansson, B. Kaijser, and H. Nygren Exposure of Cell Surface Structures in <i>Escherichia coli</i> as Studied with Ultrastructural Immunohistochemistry	177
Jean M. Schmidt and Mortimer P. Starr Current Sightings, at the Respective Type Localities and Elsewhere, of <i>Planctomyces bekefi</i> Gimesi 1924 and <i>Blastocaulis sphaerica</i> Henrici and Johnson 1935	183

Number 4, 1980

Jean M. Schmidt and Mortimer P. Starr Some Ultrastructural Features of <i>Planctomyces bekefi</i> , Morphotype I of the <i>Blastocaulis-Planctomyces</i> Group of Budding and Appendaged Bacteria.....	189
Don J. Brenner, Jan Ursing, Hervé Bercovier, Arnold G. Steigerwalt, G. Richard Fanning, Jean Michel Alonso, and H. H. Mollaret Deoxyribonucleic Acid Relatedness in <i>Yersinia enterocolitica</i> and <i>Yersinia enterocolitica</i> -Like Organisms.....	195
Hervé Bercovier, Don J. Brenner, Jan Ursing, Arnold G. Steigerwalt, G. Richard Fanning, Jean Michel Alonso, Geraldine P. Carter, and H. H. Mollaret Characterization of <i>Yersinia enterocolitica sensu stricto</i>	201
Don J. Brenner, Hervé Bercovier, Jan Ursing, Jean Michel Alonso, Arnold G. Steigerwalt, G. Richard Fanning, Geraldine P. Carter, and H. H. Mollaret <i>Yersinia intermedia</i> : A New Species of Enterobacteriaceae Composed of Rhamnose-Positive, Melibiose-Positive, Raffinose-Positive Strains (Formerly Called <i>Yersinia enterocolitica</i> or <i>Yersinia enterocolitica</i> -Like)	207
Jan Ursing, Don J. Brenner, Hervé Bercovier, G. Richard Fanning, Arnold G. Steigerwalt, Jacqueline Brault, and H. H. Mollaret <i>Yersinia frederiksenii</i> : A New Species of Enterobacteriaceae Composed of Rhamnose-Positive Strains (Formerly Called Atypical <i>Yersinia enterocolitica</i> or <i>Yersinia enterocolitica</i> -Like)	213
Hervé Bercovier, Jan Ursing, Don J. Brenner, Arnold G. Steigerwalt, G. Richard Fanning, Geraldine P. Carter, and H. H. Mollaret <i>Yersinia kristenii</i> : A New Species of Enterobacteriaceae Composed of Sucrose-Negative Strains (Formerly Called Atypical <i>Yersinia enterocolitica</i> or <i>Yersinia enterocolitica</i> -Like)	219
Hervé Bercovier, H. H. Mollaret, Jean Michel Alonso, J. Brault, G. Richard Fanning, Arnold G. Steigerwalt, and Don J. Brenner Intra- and Interspecies Relatedness of <i>Yersinia pestis</i> by DNA Hybridization and Its Relationship to <i>Yersinia pseudotuberculosis</i>	225
Jan Ursing, Arnold G. Steigerwalt, and Don J. Brenner Lack of Genetic Relatedness Between <i>Yersinia philomiragia</i> (The "Philomiragia" Bacterium) and <i>Yersinia</i> Species.....	231
Charles C. Bertke and Jerome M. Aronson Hyphal Wall Composition in <i>Apodachlyella completa</i>	235
Tateo Yamanaka and Yasuo Sakano Oxidation of Hydroxylamine to Nitrite Catalyzed by Hydroxylamine Oxidoreductase Purified from <i>Nitrosomonas europaea</i>	239
Ramesh Gupta and Carl R Woese Unusual Modification Patterns in the Transfer Ribonucleic Acids of Archaeobacteria.....	245
John J. Tudor Chemical Analysis of the Outer Cyst Wall and Inclusion Material of <i>Bdellovibrio</i> Bdello cysts	251

Number 5, 1980

Annamaria Ferrari, Novella Pacini, Enrica Canzi, and Filippo Bruno Prevalence of Oxygen-Intolerant Microorganisms in Primary Bile Acid 7 α -Dehydroxylating Mouse Intestinal Microflora	257
Jagdeep K. Buch and Prafulla J. Dave Influence of Aflatoxin B ₁ on a Bacteriocinogenic Strain of <i>Serratia marcescens</i>	261
Y. T. Tchan, Z. Wyszomirska-Dreher, and J. M. Vincent Preliminary Study of Taxonomy of <i>Azotobacter</i> and <i>Azomonas</i> by Using Rocket Line Immunoelectrophoresis	265
Dietrich Gersch and Christa Strunk Cyclic Adenosine 5'-Monophosphate as "First Messenger" in <i>Streptomyces hygroscopicus</i> —Bimodal Regulation of Germination and Growth	271

D. F. Day	
Gentamicin-Lipopolysaccharide Interactions in <i>Pseudomonas aeruginosa</i>	277
A. Morin, S. A. Saheb, J. G. Bisaillon, R. Beaudet, and M. Sylvestre	
Effect of Culture Medium Composition on Inhibition of Growth of <i>Neisseria gonorrhoeae</i> by Lactobacilli	283
Rona Hirschberg and William Hutchinson	
Photoresponses of Wild-Type and Mutant Dikaryons of <i>Chlamydomonas</i>	287
James H. Green, W. Knox Harrell, James E. Johnson, and Robert Benson	
Isolation of an Antigen from <i>Blastomyces dermatidis</i> That Is Specific for the Diagnosis of Blastomycosis	293
P. G. Standard and Leo Kaufman	
A Rapid and Specific Method for the Immunological Identification of Mycelial Form Cultures of <i>Paracoccidioides brasiliensis</i>	297
Werner Lubitz and Roland Plapp	
Murein Degradation in <i>Escherichia coli</i> Infected with Bacteriophage ϕ X174	301
Pamela L. Salvat and Barrie F. Taylor	
Blockage of Methanogenesis in Marine Sediments by the Nitrification Inhibitor 2-Chloro-6-(Trichloromethyl)Pyridine (Nitrapyrin or N-Serve)	305
Ilario Viano, Leonard Amaral, Barbara Atkinson, and Victor Lorian	
Absence of Alterations in Antigenic Determinants in <i>Salmonella typhimurium</i> After Mecillinam-Induced Morphological Changes	309
Ivan Ivanov, Nedialka Markova, Pencho Venkov, and George Markov	
Repetitive Sequences in Nuclear Deoxyribonucleic Acid of <i>Saccharomyces cerevisiae</i>	313
Joseph W. Kloepper, John Leong, Martin Teintze, and Milton N. Schroth	
<i>Pseudomonas</i> Siderophores: A Mechanism Explaining Disease-Suppressive Soils	317

Number 6, 1980

Gustaf Brunius	
Technical Aspects of the Use of 3',6'-Diacetyl Fluorescein for Vital Fluorescent Staining of Bacteria	321
Patrick A. D. Grimont, Michel Y. Popoff, Francine Grimont, Colette Coynault, and Muguette Lemelin	
Reproducibility and Correlation Study of Three Deoxyribonucleic Acid Hybridization Procedures	325
M. I. H. Aleem	
On the Energy-Coupling Sites in <i>Paracoccus denitrificans</i>	331
Patrick A. D. Grimont and Michel Y. Popoff	
Use of Principal Component Analysis in Interpretation of Deoxyribonucleic Acid Relatedness	337
Anna Maráz and Lajos Ferenczy	
Selective Transfer of Fungal Cytoplasmic Genetic Elements by Protoplast Fusion	343
Patrick A. D. Grimont, Francine Grimont, Claude Richard, and Riichi Sakazaki	
<i>Edwardsiella hoshinae</i> , A New Species of Enterobacteriaceae	347
Claus Christiansen, E. A. Freundt, and K. Maramorosch	
Identity of Cactus and Lettuce Spiroplasmas with <i>Spiroplasma citri</i> as Determined by DNA-DNA Hybridization	353
N. A. R. Gow, G. W. Gooday, R. J. Newsam, and K. Gull	
Ultrastructure of the Septum in <i>Candida albicans</i>	357
E. Bergogne-Bérézin, M. L. Joly, N. Moreau, and F. Le Goffic	
Aminoglycoside-Modifying Enzymes in Clinical Isolates of <i>Acinetobacter calcoaceticus</i>	361
Joseph W. Kloepper and Douglas G. Garrott	
Relation of In Vivo Morphology to Isolation of Plant Spiroplasmas	365

P. A. Loka Bharati, Renee Baulaigue, and Robert Matheron Breakdown of D-Glucose by Mixed Cultures of <i>Escherichia coli</i> , <i>Desulfovibrio vulgaris</i> , and <i>Chromatium vinosum</i>	371
Michael J. Daniels, David B. Archer, Michael A. Stephens, Rodney Townsend, Jane M. Longland, and Jennifer Best Comparison of Spiroplasmas by Polyacrylamide Gel Electrophoresis of Cell Proteins	377
JaRue S. Manning and Martin F. Chen Bluetongue Virus: Detection of Antiviral Immunoglobulin G By Means of Enzyme-Linked Immunosorbent Assay	381
Bernhard Schink and J. G. Zeikus Microbial Methanol Formation: A Major End Product of Pectin Metabolism	387

Index to Authors—Volume 4

- Aleem, M. I. H., 331
 Alonso, J. M., 117, 195, 201, 207, 225
 Amaral, L., 309
 Archer, D. B., 377
 Arko, R. J., 105
 Aronson, J. M., 235
 Atkinson, B., 309

 Bahr, G. F., 147
 Bang, S. S., 127, 133
 Baulaigue, R., 371
 Baumann, L., 127, 133
 Baumann, P., 127, 133
 Beaudet, R., 283
 Benson, R., 293
 Bercovier, H., 195, 201, 207, 213, 219, 225
 Bergogne-Bérézin, E., 361
 Bertke, C. C., 235
 Best, J., 377
 Bisaillon, J. G., 283
 Boni, L., 17
 Brault, J., 213, 225
 Brenner, D. J., 111, 195, 201, 207, 213, 219, 225, 231
 Brunius, G., 321
 Buch, J. K., 261
 Bruno, F., 257
 Buchanan, G. E., 63

 Campa, M., 173
 Canzi, E., 257
 Carter, G. P., 201, 207, 219
 Chandler, F. W., 105
 Chen, M. F., 381
 Christiansen, C., 353
 Cody, R. M., 139
 Colizzi, V., 173
 Cordes, L. G., 111
 Coynault, C., 325

 Daniels, M. J., 377
 Dave, P. J., 261
 Day, D. F., 277
 Del Giudice, R. A., 75
 Demko, C. A., 69

 Engler, W. F., 147

 Falcone, G., 173
 Fall, R. R., 163
 Fanning, G. R., 195, 201, 207, 213, 219, 225
 Farkaš, V., 99
 Feeley, James C., 111
 Feeley, John C., 105
 Ferenczy, L., 343
 Ferrari, A., 257
 Freundt, E. A., 353
 Fox, G. E., 123

 Gardella, R. S., 75
 Garrett, D. G., 365
 Garzelli, C., 173
 Gersch, D., 271
 Gibson, K. M., 163
 Gooday, G. W., 357
 Gorman, G. W., 111
 Gow, N. A. R., 357
 Grande, M. T., 81
 Green, J. H., 293
 Grimont, F., 325, 347
 Grimont, P. A. D., 325, 337, 347
 Gudauskas, R. T., 139
 Gull, K., 357
 Gupta, R., 245

 Halpern, Y. S., 51
 Hansson, H.-A., 177
 Hardisson, C., 91
 Harrell, W. K., 293
 Hewitt, W. L., 21
 Hirschberg, R., 287
 Holmes, B., 7
 Hopps, H. E., 75
 Hutchinson, W., 287

 Ichishima, E., 85
 Ivanov, I., 313

 Jiménez, A., 81
 Johnson, J. E., 293
 Joly, M. L., 361

 Kaijser, B., 177
 Kaufman, L., 297
 Khera, A., 13
 Khuller, G. K., 13
 Kloepper, J. W., 317, 365
 Kordová, N., 27
 Kurtz, T. O., 21

 Larkin, J. M., 155
 Larsson, L., 143
 Lau, E. P., 163
 Le Goffic, F., 361
 Lemelin, M., 325
 Lemmon, R. D., 31
 Leong, J., 317
 Levine, M. G., 41
 Lewallen Sasseville, K. R., 111
 Lim, D. V., 151
 Loka Bharati, P. A., 371
 Longland, J. M., 377
 Lorian, V., 309
 Lubitz, W., 301
 Luehrsen, K. R., 123

 Mandel, M., 41
 Manning, J. S., 381

 Maramorosch, K., 353
 Maráz, A., 343
 Mårdh, P.-A., 45, 143
 Markov, G., 313
 Markova, N., 313
 Marnell, M. H., 151
 Martin, W. J., 21
 Matheron, R., 371
 Mattsby-Baltzer, I., 177
 Mazigh, D., 177
 Mazzone, H. M., 147
 McMaster, P. R. B., 105
 Metzger, E., 51
 Minguez, M. I., 169
 Mollaret, H. H., 117, 195, 201, 207, 213, 219, 225
 Moreau, N., 361
 Morin, A., 283

 Newsam, R. J., 357
 Nomi, T., 85
 Nygren, H., 177

 Odham, G., 143
 Owen, R. J., 7

 Pacini, N., 257
 Patton, C., 111
 Peacock, M. G., 1
 Perry, J. J., 37
 Pickett, M. J., 41
 Plapp, R., 301
 Popoff, M. Y., 325, 337

 Quinn, G. R., 57

 Reddy, A. P., 95
 Reddy, J. R., 95
 Richard, C., 347
 Rowe, J. J., 31
 Ruiz-Argüeso, T., 169

 Saheb, S. A., 283
 Sakano, Y., 239
 Sakazaki, R., 347
 Salvas, P. L., 305
 Sánchez, J., 91
 Schalla, W. O., 105
 Schink, B., 387
 Schmidt, J. M., 183, 189
 Schroth, M. N., 317
 Skerman, V. B. D., 57
 Söllhuber, M., 81
 Soltész, L. V., 45
 Standard, P. G., 297
 Starr, M. P., 63, 183, 189
 Steigerwalt, A. G., 111, 195, 201, 207, 213, 219, 225, 231
 Stephens, M. A., 377

- Stevens, C., 139
Stirling, L. A., 37
Stragier, J., 17
Strunk, C., 271
Subrahmanyam, D., 13
Suzuki, S., 85
Svoboda, A., 99
Sylvestre, M., 283
- Takahashi, I., 159
Takeuchi, M., 85
Taylor, B. F., 305
Tchan, Y. T., 265
Teintze, M., 317
Thomason, B. M., 111
Thomassen, M. J., 69
Toca, L., 173
- Townsend, R., 377
Trigo, G. G., 81
Tritz, G. J., 31
Tsuruda, Y., 85
Tudor, J. J., 251
- Ursing, J., 195, 201, 207, 213, 219, 231
Ushijima, T., 85
- Van Pee, W., 17
Vázquez, D., 81
Venkov, P., 313
Verma, J. N., 13
Viano, I., 309
Vincent, J. M., 265
Vilmer, E., 117
- Weaver, R. E., 111
Weiss, E., 1
Wilkinson, H. W., 111
Williams, J. C., 1
Wilt, J. C., 27
Winston, D. J., 21
Woese, C. R., 123, 245
Wong, K. H., 105
Woolkalis, M. J., 127
Wyszomirska-Dreher, Z., 265
- Yamanaka, T., 239
Yamane, A., 85
Young, L. S., 21
- Zeikus, J. G., 387

Index to Subjects—Volume 4, 1980

- Acid carboxypeptidase, 85
Acinetobacter, 41
Acinetobacter calcoaceticus, 21, 361
 Acquired resistance to plague, 117
 Aflatoxin B₁, 261
Alcaligenes faecalis, 321
 Alcohol dehydrogenase, 37
 Alkaloids, 81
Alteromonas hanedai, 133
 α -Aminobutyrate utilization, 51
 Aminoglycosides, 21
 Aminoglycoside acetyltransferase
 [AAC(3)I], 361
 Aminoglycoside phosphotransferase
 [APH(3')I], 361
 Amnion cells, 27
 Amylovorin, 63
 Anaerobic glove cabinet procedure, 257
 Antagonistic action of *Herpetosiphon* on
 other bacteria, 57
 Antibiotics, 21
 Antibiotic susceptibility of *Pseudomonas*
 , mucoid property, 69
 Antigen
 specific CF, 293
 specific EIA, 293
 specific skin test, 293
 Antigenic determinants, 309
 Antigonoccal activity, 283
Apodachlyella completa, 235
 Appendaged bacteria, 183, 189
 Aquatic *Yersinia*, 17
 Archaeobacteria, 245
 Arginine metabolism in corn stunt
 spiroplasma, 139
Arizona: principal component analysis of
 DNA relatedness data, 337
Arthrobacter species, 163
 Ascorbate oxidation and coupled NAD⁺
 reduction, 331
Aspergillus saitoi, 85
 Aster yellows spiroplasma, 365
 Autolysis, 301
 Autotrophic bacteria, 239
 Average mass value, 147
Azomonas, 265
Azotobacter, 265

Bacillus spp., 57
Bacillus sphaericus: principal component
 analysis of DNA relatedness data, 337
Bacillus subtilis: catabolite-resistant
 mutants, 159
 Bacteriocinogeny, 261
 Bacteriophage
 mass of T 2 and T 5, 147
 ϕ X174, 301
Bacteroides fragilis, 21
 Bacteroids, 169
 Base composition, of DNA, 7
Bdellocyst
 inclusion material, 251
 outer wall, 251
 peptidoglycan, 251
Bdellovibrio bdello cysts, 251
Benecke: abolition of the genus, 127
 Bile acids, 7 α -dehydroxylating activity
 on, 257
 Biodegradation, 163
Blastocaulis-Planctomyces group, 189
Blastocaulis sphaerica, 183
Blastomyces dermatitidis, 293
 Blastomycosis, 293
 Bluetongue virus: detection of antibodies
 by ELISA, 381
 Budding bacteria, 183, 189

Candida albicans, 357
 Cardiolipin, 13
 Catabolite-resistant mutants, 159
 Cell culture, pear, 63
 Cell-mediated immunity, 117
 Cells, primary human amniotic, 27
 Cell surface structures, 177
 Cellulose, 235
 Cell wall, yeast, 99
 Chenodeoxycholic acids, 257
 Chitin, 99, 235, 357
Chlamydia trachomatis, 27
 Chlamydiae, 27
Chlamydomonas reinhardtii, 287
 Cholic acids, 257
Chromatium vinosum, 371
Cicer arietinum, 169
Citrobacter diversus: DNA hybridization,
 325
Citrobacter freundii
 DNA hybridization, 325
 principal component analysis of DNA
 relatedness data, 337
 Citrus stubborn spiroplasma, 365
Clostridium, 387
 Co-agglutination, slide: identification of
 group D streptococci, 151
 Contact sensitivity to oxazolone, 173
 Corn stunt spiroplasma, arginine
 metabolism by, 139
 Crateriform structures, 183, 189
 Cross-immunity, 117
 Cryptopleurine analogs, 81
 Cultivation of formerly noncultivable
 mycoplasmas, 75
 Culture medium, effect of on inhibition of
 Neisseria gonorrhoeae by lactobacilli,
 283
 Cyclic adenosine 3', 5'-monophosphate,
 271
 Cycloalkanes, 37
 Cyclohexane, 37
 Cyclohexanol dehydrogenase, 37
 Cystic fibrosis, 69
 Cytochrome *c*-554, 239

 Cytoplasmic genetic elements,
 Saccharomyces, 343
 7 α -Dehydroxylation, microbial, 257
 Deoxyribonucleic acid
 base composition, 7
 Flavobacterium breve, 7
 nuclear, of *Saccharomyces*, 313
 reassociation, 7
 Deoxyribonucleic acid hybridization, 325,
 347, 353
 Edwardsiella, 347
 spiroplasmas from cactus and lettuce,
 353
 Deoxyribonucleic acid relatedness, 111,
 195, 201, 207, 213, 219, 225, 231
 Legionella bozemanii and *L. dumoffii*,
 111
 principal component analysis in
 interpretation of, 337
 Yersinia enterocolitica and *Y.*
 enterocolitica-like organisms, 195
 Yersinia pestis and *Y.*
 pseudotuberculosis, 225
 Yersinia philomiragia and *Yersinia*
 species, 231
Desulfovibrio vulgaris, 371
 3',6'-Diacetyl fluorescein: use in vital
 fluorescent staining of bacteria, 321
 Diagnosis, blastomycosis, 293
 Dikaryons, behavior of, 287
 Disease-suppressive soils, 317

Edwardsiella hoshinae sp. nov., 347
Edwardsiella tarda, 325, 347
 Electron flow, reversed, 331
 Electron microscopy
 quantitative, 147
 Streptomyces hygroscopicus, 271
 Electrophoresis: spiroplasma proteins,
 377
 Energy coupling
 in autotrophically and
 heterotrophically grown cells, 331
 sites, 331
 Energy efficiency, 169
 Enrichment medium: *Neisseria*
 gonorrhoeae, 45
Enterobacter cloacae, 143, 325
 Enterobacteria, 133, 347
 Enterobacter species, 21
 Enzyme-linked immunosorbent assay,
 detection of bluetongue virus
 antibodies by, 381
 Enzymes
 acid carboxypeptidase of *Aspergillus*
 saitoi, 85
 aminoglycoside-modifying: in
 Acinetobacter calcoaceticus, 361
 autolytic, 301
 cyclohexanol dehydrogenase from
 Nocardia, 37

- β -galactosidase of *Streptomyces violaceus*, 91
glutamine synthetase, 133
pyridine nucleotide cycle, 31
superoxide dismutase, 133
Epiphyte, filamentous, on *Thiothrix*, 155
Epithelial cells, 27
Erwinia, 387
Erwinia amylovora, 63
Erwinia chrysanthemi: principal component analysis of DNA relatedness data, 337
Erysiphe euphorbiae sp. nov., 95
Erythromycin, mitochondrially inherited resistance to, 343
Escherichia coli, 21, 31, 51, 143, 301, 321, 325, 337, 371
DNA hybridization, 325
exposure of cell surface structures, 177
principal component analysis of DNA relatedness data, 337
Evolution, 133, 251
Fireblight disease, 63
Flavobacterium, 41
Flavobacterium breve, 7
Flavobacterium meningosepticum, 7
Flavobacterium odoratum, 7
Fluorescent staining, 321
Fusarium oxysporum, 317
Fusarium-wilt disease, 317

Gaeumannomyces graminis, 317
 β -Galactosidase induction, 91
Genome size, 7
Gentamicin, 277
Germination, regulation of by cAMP, 271
Gliding motility, 155
 β -Glucan, 99, 235
Glucose fermentation, 371
Glucose metabolism, 1
Glutamate metabolism, 1
Glutamine metabolism, 1
Glutamine synthetase, 133
Gonidia, 155
Gonorrhea, resistance to, 283
Growth inhibition: peptones plus extracts, 75
Growth, regulation of by cAMP, 271
Growth yield constant, 371

Halobacterium, 245
Halococcus, 245
Halophiles, extreme, 245
Head-space gas chromatography, 143
Herpetosiphon spp., 57
Hydrogen evolution, 169
Hydroxyapatite: use in DNA hybridization, 325
Hydroxylamine, oxidation of, 239
Hydroxylamine oxidoreductase, 239
Hypersensitivity, to *Legionella pneumophila*, 105
Hypal wall composition: *Apodachlyella completa*, 235

Immunodiffusion
 Azotobacter and *Azomonas* taxonomy, 265
Immuno-electrophoresis
 Azotobacter and *Azomonas* taxonomy, 265
Immunohistochemistry, 177
Induction of bacteriocins, 261
Jatropha gossypifolia Linn., 95

Klebsiella pneumoniae, 21, 143

 β -Lactam antibiotics, 21
Lactobacilli: inhibition of *Neisseria gonorrhoeae* growth, 283
Lactose utilization in *Streptomyces violaceus*, 91
Legionella bozemanii sp. nov., 111
Legionella dumoffii sp. nov., 111
Legionella micdadei, 111
Legionella pneumophila, 1, 105, 111
 hypersensitivity to, 105
Legionellosis
 detection of, 105
 hypersensitivity in, 105
 skin test for, 105
Legionnaires' disease agent, 1
Leptomitales, 235
Levinea amaltonica: DNA hybridization, 325
Lipids
 synthesis, 13
 turnover, 13
Lipopolysaccharide, 277
LLO (*Legionella*-like organisms), 111
Luminous bacteria, 127
LY127935 (moxalactam), 21
Lysis, 301
Lysozyme resistance: bdelloplast wall, 251

Marine bacteria, 127
Mass spectrometry, 143
Mecillinam, 309
Messenger, intercellular, 271
Methanobacterium, 15
Methanobrevibacter, 245
Methanococcus, 245
Methanogenesis: blockage of by nitrapyrin, 305
Methanogens, 245
Methanogenesis, 387
Methanomicrobium, 245
Methanosarcina, 245
3-Methylvaleric acid, 163
Micromonospora sp., 57
Mitochondrial transfer, *Saccharomyces*, 343
Mixed cultures of *Escherichia coli*, *Desulfovibrio vulgaris*, and *Chromatium vinosum*, 371
Molecular weight, 147
Moraxella, 41
Morganella morganii: DNA hybridization, 325

Mouse cecal content, 257
Moxalactam, (LY127935), 21
MRS medium, 283
Mucoid property: antibiotic susceptibility of *Pseudomonas aeruginosa*, 69
Murein, 301
Mutants
 α -aminobutyrate utilization, 51
 catabolite-resistant, of *Bacillus subtilis*, 159
 defective in pyridine nucleotide cycle enzymes, 31
 phototaxis, 287
 respiratory-deficient, 343
Mycobacterium species, 163
Mycoplasma hyorhinis, 75

Nalidixic acid, 159
Neisseria gonorrhoeae, 45, 283
 serum-free liquid medium, 45
Nicotinamide, 31
Nicotinamide adenine dinucleotide, oxidized (NAD⁺), reduction and coupled ascorbate oxidation, 331
Nicotinic acid, 31
Nitrapyrin, 305
Nitrification inhibitor, 305
Nitrifying bacteria, 239
Nitrite, 239
Nitrogen fixation, 169
Nitrosomonas europaea, 239
Nocardia sp., 37
Nodules, 169
Nonfermentative bacilli (IIk-2 group), taxonomy of, 41
N-Serve, 305
Nuclease, S1
 DNA hybridization in *Edwardsiella* spp., 347
 use in DNA hybridization, 325
Nucleosides, modified, 245

Oomycete systematics, 235
Ornithine: formed from arginine by corn stunt spiroplasma, 139
Oxazolone sensitivity, 173
Oxygen-intolerant microorganisms, 257

Paracoccus denitrificans, 331
Parasitism: *Bacillus* spp. and *Micromonospora* sp., 57
Pectin
 metabolism, 387
 methylesterase, 387
Peptidoglycan
 bdelloplast, 251
 lysozyme resistant, 251
 modified, 251
Peyer's patches, 117
Phage typing, aquatic *Yersinia*, 17
"Philomiragia" bacterium, 231
Phosphatidylethanolamine, 13
Phosphoglyceride metabolism, 13
Phospholipids, inositol-containing, 13

- Photoaccumulation in *Chlamydomonas*, 287
- Photobacterium*, 127, 133
- Phototaxis, in *Chlamydomonas*, 287
- Phytotoxic material, fireblight disease, 63
- Planctomyces bekefii*, 183, 189
- Plesiomonas*, 133
- Polyethylene glycol, 343
- Polyphenylalanine synthesis, 81
- Poly(U)-directed polyphenylalanine synthesis, 81
- Powdery mildews, 95
- Principal component analysis: use in interpretation of DNA relatedness, 337
- Procedure, DNA hybridization: reproducibility and correlation study, 325
- Proteins, spiroplasma: electrophoresis, comparison, and classification, 377
- Proteus mirabilis*, 143, 325
- Proteus vulgaris*, 143
- Protoplast
- anucleate, *Saccharomyces*, 343
 - regeneration, 99
- Pseudomonas*, 317, 387
- Pseudomonas aeruginosa*, 21, 69, 143, 173
- lipopolysaccharide-gentamicin interactions, 277
- Pseudomonas citronellolis*, 163
- Reassociation, of DNA, 7
- Reassociation kinetics: nuclear DNA of *Saccharomyces*, 313
- Relative binding ratios, 325
- Repetitive sequences: nuclear DNA of *Saccharomyces*, 313
- Reversed electron flow, 331
- Rhizobium*, 169
- Ribosomal ribonucleic acid
- 5S, *Tetrahymena thermophila*, 123
 - phylogenetic comparisons, 123
- Rocket line immunoelectrophoresis, 265
- Rosettes, 155
- Saccharomyces cerevisiae*, 99, 313, 343
- Salmonella*: principal component analysis of DNA relatedness data, 337
- Salmonella arizonae*: DNA hybridization, 325
- Salmonella paratyphi*: DNA hybridization, 325
- Salmonella typhimurium*, 309, 325
- Secondary alcohol, 37
- Septum, *Candida albicans*: ultrastructure, 357
- Serological typing, aquatic *Yersinia*, 17
- Serratia marcescens*, 261, 325
- Serratia* spp.: principal component analysis of DNA relatedness data, 337
- Sheathed bacteria, 155
- Shigella sonnei*: DNA hybridization, 325
- Siderophores, 317
- Soils, disease-suppressive, 317
- Spiroplasma citri*, 353, 365, 377
- Spiroplasmas, 139, 353, 365, 377
- cactus and lettuce: identity with *Spiroplasma citri* determined by DNA hybridization, 353
 - comparison of, by polyacrylamide gel electrophoresis of cell proteins, 377
 - plant: isolation and in vivo morphology, 365
- Sporulation, 159
- Staining, vital fluorescent, 321
- Stalks, 183, 189
- Staphylococcus aureus*, 21
- Streptococci: identification of group D by slide co-agglutination, 151
- Streptomyces*, differentiation of, 271
- Streptomyces griseus*, 13
- Streptomyces hygroscopicus*, 271
- Streptomyces violaceus*, 91
- Sulfate reduction, 371
- Sulfolobus*, 245
- Sulfur bacteria, 155
- Superoxide dismutase, 133
- Suppressor cells, 173
- Take-all disease, 317
- Taxonomy
- Azotobacter* and *Azomonas*, 265
 - nonfermentative bacteria (IIk-2 group), 41
 - IIk-2 group, 41
 - Vibrio*, *Beneckea*, and *Photobacterium*, 127
- Tetrahymena thermophila*: sequence of 5S rRNA, 123
- Thermophiles, extreme, 245
- Thermoplasma*, 245
- Thiothrix*, isolation of, 144
- Trachoma-inclusion conjunctivitis, 27
- Transfer ribonucleic acid, 245
- Trypsin effect on amniotic cells, 27
- Type localities, 183
- Ultrastructure
- Candida albicans* septum, 357
 - Planctomyces bekefii*, 183, 189
- Vibrio*, 127, 133
- Virus, bluetongue, 381
- Vital fluorescent staining, 321
- WIGA (*Legionella bozemanii*), 111
- X disease spiroplasma
- Green Valley strain, 365
 - peach yellow leaf strain, 365
- Xenorhabdus*, 133
- Yeast, 81, 99, 313, 343
- protoplast fusion, 343
 - protoplasts, 99
- Yersinia*, 17, 117, 189, 195, 201, 207, 213, 219, 225, 231
- biochemical, serological, and phage typing, 17
 - from river water, 17
- Yersinia enterocolitica*, 117, 195, 201
- Yersinia enterocolitica*-like organisms, 189, 207, 213, 219
- Yersinia frederiksenii* sp. nov., 201, 213
- Yersinia intermedia* sp. nov., 201, 207
- Yersinia kristensenii* sp. nov., 201, 219
- Yersinia pestis*, 117, 225
- Yersinia philomiragia*, 231
- Yersinia pseudotuberculosis*, 225

